Neurological Correspondence.

New York, Sept. 11th, 1877.

Mr. Editor:—It is with pleasure that I am able to forward you, notwithstanding the panic and the exceedingly dry weather, evidences of action of brain tissue which I think will compare favorably with any material forwarded in more lively times.

That ripe scholar and distinguished medical-jurist, Prof. Ray, of Philadelphia, not long since paid us a visit, and left with us a few thoughts upon Testamentary Capacity. This is an important subject, and any writing which will assist the medical and legal professions to justly carry out post mortem wishes and bequests should be heartily welcomed. This, therefore, will form a fitting supplement to what was forwarded you about one year ago on the same subject.

Dr. Spitzka contributes a valuable essay on the localization of cerebral diseases, which at this present time, when the subject of localization of centers is so extensively discussed, is exceedingly interesting, while our friend, Dr. Kinman, has given us what we might consider the medical phase of the great temperance discussion now sweeping over many portions of our country. But as the lawyers say, the documents will speak for themselves. Therefore, without further ado, we proceed:

The Medico-Legal Society.

On the 13th June last, Prof. Isaac Ray, of Philadelphia, delivered an address before the Medico-Legal Society on Testamentary Capacity, and as this paper is not only intrinsically valuable, but also discusses the mind in health and disease, I am constrained to forward very full notes.

Prof. Ray spoke about as follows:

To the question, what shall become of a man's property after death, the law of our own and of every civilized people, in recognition of what was deemed by the old jurists as a *jus naturale*, replies that he may dispose of it himself before he dies, under some limitations required by a regard for the rights of others. It only requires that when exercising this right he should be of sound mind, and this leads to the inquiry, what is meant by a sound mind. At first blush this would seem to be a strictly medical question, and so regarding it, the physician considers it as a matter of health or disease, of normal or abnormal condition. The jurist, on the other hand, ignoring entirely the physical element implied in the question, considers it solely as a matter of mental capacity. As in cases that come into litigation both parties urge their views as the proper guide to the ultimate decision, discrepancy and conflict must naturally follow. Much of this diversity of views arose, on both sides, undoubtedly, from a very imperfect knowledge of the subject matter itself, as the slightest examination will show.

From the earliest times, the law has recognized insanity as a disturbing element in human conduct, and allowed it to modify more or less its administration of justice. Therefore, the question of questions on this subject is, how far and in what manner this disturbing influence really extends. To answer this question, resort has been had to two sources of instruction. One is that observation of the insane which any one may make, in the ordinary walks of life. While we admit that much may, possibly, be learned in this way, yet it is no less certain that impressions thus obtained are quite unreliable for any practical purpose. A very few cases only can come under the cognizance of any individual, and the notice taken of them must necessarily be hasty and superficial. The more demonstrative symptoms only will arrest the attention, while the less obvious, though perhaps more significant, may be overlooked altogether. Neither in this way is there any element of progress. No amount of attainment leads to fresh attainment. It lives and dies with him who makes it. Observers more sagacious than Shakespeare and Walter Scott can scarcely be expected. And yet the current ideas respecting insanity are chiefly derived from this source.

The other source of information is that where insanity is studied as a disease, in the spirit and methods of a scientific inquiry. Here, not a few only, but all its phenomena are observed. Its various phases as presented from day to day, from month to month, and from year to year, in the different grades and stages, are carefully studied with the abundant facilities afforded by the modern hospital for the insane. The study of the physiological and pathological laws by which it is governed, of the ancestral defects in which it originates, and of the adverse influences by which it is developed, throws light on the character of each individual case, without which we can scarcely avoid mistake.

Ideas derived from this quarter have always determined to some extent the rules and practices of the English law, not, however, without great resistance, especially in modern times. The classification of mental diseases, the terms and phrases, found in medical books, were freely adopted into the civil law, with such practical consequences as they would naturally suggest. The psychological relations of the different forms of insanity were but little considered by the ancient physicians, and of course they could furnish the lawyers with little aid in the work respecting it which fell to them. Indeed, it could not have been otherwise, for their means of learning about insanity were hardly better than those possessed by the world in general. Their ignorance of anatomy and physiology led to the crudest theories on the nature of disease, and their observation of its phenomena was directed by a false pathology rather than by any methods of exact and patient inquiry. The only advantage they possessed over others in the study of insanity consisted in the more close and continuous observation of individual cases which their professional duties required. Through the whole mediæval period, and long after the revival of learning, medical writers were content to abide by the notions of Celsus and Galen, and these were all they could offer to aid the lawyer and the law-giver in the administration of justice. By this aid, such as it was, the latter undertook to say how far and in what way insanity modifies the legal consequences of human conduct. To simplify the process, they found it convenient to consider the disease in its different forms, or more correctly speaking, in its different grades of apparent severity. The first systematic attempt of this kind was made by Lord Coke, who recognized four descriptions of persons as being *non compos mentis*, viz., idiots; those who by sickness, grief, or other accident, have wholly lost their memory and understanding; those called lunatics who have sometimes their understanding and sometimes not; and lastly, those who by their own vicious act have deprived themselves for a time of their memory and understanding, such as drunkards. Rude as this classification is, it has some semblance of correctness, but like the more elaborate rules and tests of more recent times, it labors under the defect of being difficult of application. It affords no help to settle the question whether, in a given case, the person concerned belongs to either of these classes. Regarded as a scientific formulary it is quite defective, because it ignores completely some well recognized forms of mental disease. Many years afterwards, Lord Hale, availing himself of the more advanced medical knowledge of his time, corrected this defect in some degree, and ventured upon some rules for the settlement of the practical question. But with all their defects, and in the face of the better knowledge of our times, the doctrines of these men still govern, in a considerable degree, the decisions of English and American courts.

Unquestionably, they reflected and confirmed the prevalent sentiment which regarded the last will and testament as an instrument too sacred to be easily disturbed. And we know, as a matter of fact, how jealously it was guarded from all assaults, and especially from such as were directed against the mental competence of the testator. Let us now examine the decisions of the courts in the new light shed upon the subject by the progress of medical science during the last two centuries, for within that period have occurred the two great discoveries of the circulation of the blood and of the functions of the nerves. And the same period has witnessed the establishment of multitudes of hospitals for the insane, affording opportunities for the clinical study of the disease and for the observation of the ways, manners, conduct and conversation of the insane, never enjoyed before.

In that form of mental disorder called acute mania, in which the mental movements are continuously strange, wild and incoherent—madness without method—the testamentary incompetence of the patient has never been questioned. Indeed, the condition is one in which we should hardly expect any disposition to make a will, and I am not aware that such a one has ever been offered for probate. Lord Coke, you observe, speaks of a description of lunatics who have sometimes understanding and sometimes not. This statement has reference to a phenomenon once supposed to be a very common occurrence—I mean that of lucid intervals, as they were called. So common were they thought to be that in every case of alleged insanity the question of a lucid interval was always raised as a matter of course. In fact, the practice has not yet entirely ceased. The idea is, that in most insane people reason returns at intervals, and with it their original competence and responsibility. The law not only supposes the probability of such a period, but the party availing himself of the plea of insanity was obliged to show, even though the burden of proof may not always have been put upon him directly, that there was no lucid interval. Considering how small a foundation this whole doctrine of lucid intervals has, it is difficult to account for its prevalence. Unquestionably, it sometimes happens that an insane person comes to himself, manifesting his natural propriety of conduct and conversation, his memory and perception apparently clear, the cloud returning after a few days, as dark and dense as before. Exactly how far the mind, in this condition, is free from the influence of disease, we never can know. Considering, however, the suddenness of the change, the brevity of its duration, and the long continuance of the disease, when it occurs in chronic cases, it is not likely that the mind is restored to its normal degree of clearness. It must be borne in mind, also, that, as described by distinguished legal authorities, they are of very rare occurrence. I have not seen more than half a dozen cases in all my experience. All nervous diseases are subject, more or less, to a certain law of periodicity, by reason of which at intervals their regular course is changed, and other incidents come and go in a certain order of succession. The change thus produced may sometimes amount to an entire disappearance of the signs of disease. This phenomena is not unfrequently witnessed in the early stage of acute mania. Within the first month, there may occur a rather sudden cessation of the manifestations of disease, in which the patient is calm, quiet, talks and behaves sensibly, though, if closely observed, there will be found some indistinctness of memory, and confusion of thought, especially with reference to the circumstances of the attack. This condition has often been confounded with lucid intervals, especially by lawyers, who find it difficult to see a distinction which can be visible only to the long practised observer. To the common eye, any remission in which the patient is tolerably calm after being violent, and answers a few questions rationally, seems like a lucid interval.

Admitting, as I do, that a valid will may be made in the lucid interval, it is so likely that some shadow of disease may rest upon it, that any testamentary act during that period should be very closely scrutinized. Some qualifications for the act are required, not otherwise needed. It should be shown that changes in the circumstances and conditions of those whom the testator is disposed to benefit, having occurred when he was incapable of understanding and appreciating them, were brought to his knowledge and comprehension, since such things would naturally affect the dispositions of the will. Because it must be borne in mind that the past, for months or years, may have been a complete blank, or filled with strange and deceptive images. In short, we may conceive of a case whêre every testamentary qualification was possessed, but, certainly, the fact must be of rare occurrence, and difficult of proof. I know of only one case reported of a will made in what was improperly called a lucid interval, and established—that of Cartright *v.* Cartright, 1 Phillimore, 90. The testator was in an asylum, and so severe was the grade of her disease, that she had restraint on her limbs at the moment when she called for pen, ink and paper, in order to write her will. This she did, at last, after writing on several pieces of paper, which she tore up and threw into the grate, and walking up and down wildly, and muttering to herself. The will was established, the court deciding that it was made during a lucid interval, on the strength of the internal evidence, as it made a natural and consistent distribution of her property.

This fact the court considered conclusive proof that a lucid interval had taken place. The result may have been right, but it was reached by a sort of logic known as reasoning in a circle. The correctness of the will proves the interval, and the interval being proved, makes the will valid. Had the court, while squarely admitting the insanity of the testator, declared that the character of the act showed that she was still rational enough to make a valid will, it would have uttered good sense and good science. Here we see the binding influence of the old law, as expounded by Coke. It being proved that the testator was a lunatic, she was necessarily *non compos*, and could become otherwise only by recovery or a lucid interval.

This influence has not yet entirely lost its force, for I observe that lawyers are not content with proving competence sufficient for the act in question, but also labor hard to prove also perfect soundness of mind. In a case that came under notice, two or three years since, an attempt was made to void the contracts of a person recently deceased, on the ground of insanity. It was shown that the transaction—the sale of coal lands—was just and fair in every particular; that he obtained a price pronounced by his neighbors and advisors to be a fair one; and that he sold then and there without waiting for a prospective rise in value, simply because he needed the money. That he was a lawyer in full practice; a leader at his bar almost up to the day of his death; and all the while, the trusted counsellor of several large corporations—all this needed no proof, for it was seen by everybody. And yet because of the admitted fact that this man had always been remarkably eccentric in his ways and manners, week after week was spent in endeavoring to show either that he was or was not technically insane. If the administration of the law has for its object the promotion of justice among men, we may venture to say that the means it used in this instance were signally irrelevant.

Further examination of Coke's classification of the *non compos mentis* furnishes fresh proof how little help it gave the medical jurist in settling the questions that came before him.

One class, he says, consists of those who by sickness, grief, or other accident, have wholly lost their memory and understanding. The word *wholly* is probably used inadvertantly, because it would refer to persons in the very last stage of dementia, whose acts would scarcely become matter of litigation, whereas, he had in mind, no doubt, a numerous class who, while moving about among men and taking some part in the affairs of life, are, nevertheless, laboring under considerable mental infirmity. We have reason to think that this class was meant to embrace the subjects of senile dementia, of the weakness of old age, and of the damage inflicted by paralysis and other cerebral affection. His allusion to grief and accidents implies, probably, a mistaken notion he had conceived respecting the cause of the mental affection. Taken as a whole, this class, unquestionably, has always furnished the courts with a greater amount ot litigation than all others put together, in the matter of wills. The more exact and well defined are our notions of mental capacity, the more foundation they have in close, personal observation of this class of persons, the better will be our administration of justice. Much of the apparent conflict in the adjudication of their cases has arisen, I think, from a faulty appreciation of the mental qualities chiefly concerned, and therefore I invite your attention, for a moment, to this point.

Old age is usually accompanied by a certain enfeeblement of the mental as well as the bodily powers. This condition does not imply unsoundness or incompetence. It merely means a diminished power of endurance, an incapacity for those long-sustained efforts once comparatively easy, more difficulty in grasping obscure and remote relations. The mind has lost none of its characteristic tastes, and none of its fondness for its accustomed pursuits, but it is satisfied with easier tasks, and welcomes longer intervals of rest. The only mental faculty obviously involved in this condition is the memory, especially of recent incidents, even while old ones are well retained. The forgetfulness of young people comes from carelessness and a predominant interest in other thoughts. With the aged, the new impression, however vivid at first, fades away from a lack of power in the brain to retain it. It must be quickly and frequently repeated, before it will endure. So far the change may be considered as the normal result of old age, and destitute of any legal consequences. Occasionally, indeed, in the closing years, the mind displays even more than its wonted vigor and brilliancy. It was these exceptional instances that led the poet Waller to say,

> "The soul's dark cottage battered and decayed,
> Lets in new light through chinks which time has made."

Sometimes the change here described proceeds still farther, and induces a condition that is abnormal, ending in *senile dementia.* The memory becomes less and less tenacious; the perceptions less exact and clear, one person or thing being mistaken for another, and their relations misunderstood. Then the judgment—that is, the power of discerning the relations of cause and effect, of distinguishing between the specious and true, of taking in the remoter considerations germane to the case in hand, of weighing and rightly appreciating conflicting claims—loses its vigor and is easily led astray by false lights. And so the process of decay goes on until it reaches its utmost limit in virtual extinction of the mental powers. Now, what we would like to know is the precise point at which testamentary capacity ends, and this, of course, is beyond our reach. As to the effect of this condition, both in its earliest and its latest stage, there can be no diversity of opinion. It is during the intermediate stage that it gives rise to obscurity, doubt, conflicting evidence, and abundant litigation.

To arrive at a correct decision we must first understand what are the intellectual powers necessary to testamentary capacity. In the first place, the memory must be active enough to bring up to mind all those who have natural claims on the bounty of the testator; to make him aware of the nature of his property, its location, the encumbrances upon it, and his debts. If he makes bequests in certain sums of money, he should know with some degree of exactness the value of his property; and if he has made previous wills, he should be aware of their contents. Whether he actually had such a memory will generally be determined, for the most part, by the circumstances of the transaction. In most cases evidence is given respecting the general condition of the memory, as manifested in the ordinary discourse, and this, coming as it does in a loose, detached, fragmentary manner, from persons usually unaccustomed to observe mental phenomena closely, requires to be carefully and intelligently examined. The lapses of memory exhibited by all old people must be distinguished from that utter loss of memory that no effort can retrieve, even for a moment. The former is chiefly in regard to recent things, which are readily brought back to mind, and are retained for a while. The latter embraces old as well as recent incidents, impressions customary as well as casual, ideas the most as well as the least familiar. The old man who is constantly mislaying his spectacles. forgetting the face of the person to whom he was introduced the day before, and marches up the broad aisle of the church, holding up the umbrella over his head, may be found when his attention is specially directed to a subject, to remember its prominent points, understand them well, and govern himself accordingly If, on the other hand, a person has utterly forgotten the events of his earlier age; if he cannot tell his own age, or the year of our national independence, is unable to tell how many six and six make, and has forgotten whether his estate is in lands, or houses or stocks, he surely has lost his testamentary capacity.

Let it be observed, in this connection, that many of those old people so forgetful of passing events, and so careless of little proprieties, need only to have their attention fixed on the matter in hand to display no lack of memory or understanding.

The mental infirmity, most often the source of testamentary incapacity, is impaired judgment. To make an equitable distribution of his estate among those connected with him by blood or affection.—such a one, I mean, as he would have made while confessedly sound—implies, on the part of the testator, a variety of considerations that cannot safely be overlooked. He should be able to appreciate properly, the nature of their claims, their present and prospective necessities and the favors they have already received; and all this, not to mention other considerations, requires a nice discrimination and the power of looking before and after. If the bequests indicate any deficiency in these respects, it certainly furnishes ground of suspicion.

There is a large class, you observe, still unprovided for in the schedule of Coke—I refer to that of persons neither idiots, lunatics, nor the victims of sickness, grief or old age—persons having by nature a deficient mental endowment, and embraced under the appellation of imbeciles. The wills of such persons often come into dispute, and though their disposal is determined by the same principles as those last referred to, yet they give rise to a larger range of speculation and doubt. In the one case, the question on which the result may depend, is how much mental power has been lost; while, in the other, the question is how much was ever possessed. The difficulty of the question is increased by the fact that in many, if not most, imbeciles, there is much inequality in the strength and development of the several mental faculties. The same person may be shrewd, even sharp in some transactions, dull and foolish in others; at one moment uttering a pithy remark, at another leaving no doubt of his native simplicity. With shrewdness and folly thus displayed, side by side, it is not strange that different observers are sometimes very differently impressed by what they witness. One who has sold him a gun, or a fishing-rod, or made for him some little article of use or ornament, and listened to his comments, is ready to pronounce him about as sensible as the generality of men. Another who has witnessed his conduct in affairs requiring some prudence and judgment, is strongly impressed with the depth and breadth of his simplicity. And this is a specimen of the evidence heard in our courts when they are called to adjudicate in cases involving the persons or property of simple-minded people. It is also a lamentable fact, that the disposition to form positive conclusions on the strength of a partial, one-sided observation, is about as common among men of some culture, as it is among those who are without pretensions to any. Until mental manifestations are better understood, we shall continue to witness these strangely conflicting conclusions in litigation involving the interest of imbecile persons.

To meet this state of things, the first thought was to fix upon some arbitrary, specific standard of mental power by which the minds of imbeciles should be measured. I know of only one that has survived the test of experience, and even that is seldom offered now. It has been said with some show of authority, that to make a valid will one must have capacity sufficient to make a contract. Had these conditions been reversed, and the proposition been that as much mind was required to make a contract as to make a will, it would have had as much support in the nature of things as the other, and that is none at all. Until we are satisfied as to the exact amount of mind necessary to make a contract, this measure will scarcely help us, even with the estimate I once heard given from the bench, that it is as much as is required in the ordinary business of life, which must remind us of that venerable measure of size with which we are all familiar, "as big as a piece of chalk." The only rule founded in reason and justice is, sufficient mind for the occasion. I hardly need to suggest that to distribute a large estate, equitably and judiciously, among a considerable number of persons and institutions, must require a stronger and wider exercise of mind, than would be needed, for the disposal of a small estate among the few legally entitled to a share of it. And as much may be said of a contract involving many contingencies as compared with one disposing of a few acres of land.

Thus far, it will be seen, the elements of testamentary capacity are strictly intellectual, pertaining to the pure reason. A testament, however, is not always the product exclusively of the understanding. The moral part of our nature—the sentiments, affections, and emotions—may be as potent an an agency in its production, as the intellectual. Hopes and fears, attachments new and old, a sense of dependence, a chronic habit of submission and deference, assiduous attentions, crafty insinuations,—these may greatly prevail over the most obvious claims created by the law of inheritance. Inducements of this character are not excluded by the law. All that the law requires in feeble-minded people is, that they be not excessive, calculated to drive the mind from well chosen, well matured arrangements, and divert the course of property into channels it would not otherwise have taken.

In examining these cases we must never forget that both the intellectual and the moral faculties may have been concerned in their production, because if either of these factors is left out of the account, we are greatly in danger of being misled. Nor must we forget while investigating their respective agency, that they may act with some degree of independence of each other. The same person who thinks correctly and sensibly so far as he goes, may readily yield to inducements strongly presented to his feelings. In a case lately tried in Massachusetts, this distinction was so sharply, and so pertinently made, that it may claim a moment's attention. A man, never married, confessedly feeble-minded and under guardianship, concluded to make his will, which he did without urging or hindrance from any quarter. In this he bequeathed his property—$200,000—to various charitable institutions, and to a few intimate friends from whom he had received much care and kindness, completely ignoring his sisters, for the reason, as it appeared in evidence, that they took no notice of him, and were wealthy enough already. In making the will he was aided by a lawyer of the highest moral standing, and the whole transaction was free from suspicious circumstances. Two or three years afterwards, while in company of certain persons whose relations to him gave them much influence over him, he became so much excited by their reproaches and solicitations, that he called for the will and drew his pen through his signature. The will was offered for probate, but the judge declined to approve it, and an appeal was made to the Supreme Judicial Court, in which a trial ended in the establishment of the will. The jury virtually said the will was a rational act, rationally and calmly done, with memory and judgment sufficient for the purpose, but the revocation was done in a moment of passion, excited by the suggestions of others, and too strong for his feeble mind to resist. The verdict of the jury was approved by the court.

The question of testamentary capacity in feeble-minded people is generally connected with that of outside influence. Sound-minded people may, and often do ask advice in the final disposition of their property, and the result is, very likely, all the better for it. Such advice may be needed all the more where the mind is weakened by nature or disease, but when obtained it is always, and very justly, viewed by the law with suspicion, and the dominant question is whether or not the testator has been subjected to what is called *undue influence.* Because, sound or unsound, strong or weak, his will must be his own will, and not another's. If the influence is such that the wishes and the interests of other parties rather than the testator's, are represented, then the law supposes that the will is really not his will. In order to establish the fact of undue influence, however, a foundation must be laid by first proving the fact of mental deficiency. The attempt is sometimes made by lawyers aided by physicians, to reverse the process. Unless the testator has clearly manifested some mental unsoundness by his previous acts, the proof of undue influence should be strong enough to be unmistakable. It often happens that no such case can be shown; that up to the moment of the making of the will, no indications of feebleness, of delusion, or wandering, have been witnessed. I do not say that even under such circumstances, undue influence may not be exerted. When we consider the enfeebling effect on body and mind of a long, last illness, of the many infirmities that often attend this period, and of the utter prostration of the will produced by pain and a sense of complete dependence, we can scarcely conceive of conditions better fitted for the exercise of an undue influence over testamentary dispositions. The courts of our time have become quite familiar with a certain class of cases presenting these traits. An old man marries a young wife, and within a year or two dies, leaving a will greatly in her favor, much to the disappointment of relatives who would otherwise have received the whole of the estate. These cases are exceedingly embarrassing, for we are often left without any clew to guide us to a rightful conclusion. We are sure it is such a will as the testator would not have made in the vigor and flush of health, while we hesitate to say, under the conviction that a man has a right to do what he pleases with his own, how far a sense of gratitude for kindness and service may be allowed to shape his decision. Fortunately, perhaps, it frequently happens that some circumstance sheds a little light upon the case, enabling the jury, if not to decide according to its legal merits, yet to do what, in their rude estimate, "is about right."

You observed, no doubt, that Coke, in his classification of mental disorders, ignores entirely a form of the disease, which is far from being very rare. The reason was, probably, that it seemed so partial in its operation, it left so much of the mind free apparently from its influence--that it was not supposed to impair the person's responsibility for civil or criminal acts. Nearly a hundred years went by before it was first formally recognized by Lord Hale, as well as another hundred years after him, before the law began to take it into the account as an element of excuse for human delinquency, or regard it as a claim on its protection. I refer to what is now called partial insanity, in which a person while entertaining some notions having no possible existence, in all other respects, talks and acts like other men. How to meet the difficulties suggested by this form of mental disease, was a problem entirely beyond the reach of this luminary of the English law, and he passed it along to his successors, many of whom even to this day, have been as unwilling as he to give it any practical effect in the administration of justice. The light shed upon the nature of disease, and especially of insanity, by our better methods and opportunities of study, has not been utterly disregarded, and though we are too often obliged to witness the display of the old ignorance rather than the new knowledge, yet the time is coming, it is to be hoped, when the law will be in entire accordance with science.

It is somewhat curious that up to the present century we hear nothing of partial insanity, strictly so called, in civil cases, and in criminal cases where it was sometimes offered in defence, it scarcely received a respectful hearing. The common idea that the monamaniac had still reason enough left for all practical purposes, protected his testamentary privileges, and generally, it may be supposed, the rule worked no injustice. Had the courts been brought face to face with a will, the manifest offspring of a gross delusion, they might have refused to sustain it. It is hardly conceivable that they would have approved a will devising a large estate to the building of a railway to the moon, (though hardly more a folly than many exclusively mundane that have been built), however prudent, sagacious and intelligent the testator may have been in the ordinary affairs of life. It was not until 1828 that this question of the legal effect of partial insanity on the testamentary capacity was squarely met and rightly decided. I refer, of course, to the case of *Dew* v. *Clarke*, which came up for final adjudication into one of the English ecclesiastical courts, Sir John Nicholl presiding. The matter in issue was the validity of the will of a London surgeon, who bequeathed the bulk of his estate to his nephews, leaving only a life-interest in a small portion of it to a daughter, and only child. The testator had, for many years, very creditably practised his profession, and though regarded by his patients, and many others, as eccentric and irritable, was never suspected by them of laboring under any kind of mental derangement. On the other hand, it appeared that he had always entertained the strongest aversion towards this daughter, describing her to his friends and strangers as prone to all manner of vice, as a perfect fiend, an imp of Satan, charging her even with impossible crimes. His treatment of her was almost incredibly savage, not only compelling her to perform the most menial offices, but would often strike her with his clenched fists, cut her flesh with a horsewhip, and once when she was only ten or eleven years old, he stripped her naked, tied her to a bed-post, and after flogging her with a large rod intertwisted with brass wire, rubbed her back with brine. It appeared that there was no cause for this extraordinary antipathy. The girl was described by all who knew her as amiable and docile in her disposition, and perfectly correct in her deportment. Against this will the court pronounced an exhaustive and most elaborate judgment, untrammeled as he was by the precedents of the common law, and inspired by the larger spirit and freedom of the civil law. Remarkably well informed on the nature of insanity, he discussed its effect on the mind of the testator with a sagacity never before witnessed in a court of law, reaching to the conclusion that the mental disorder was fatal to the validity of the will. Against the doctrine there announced, novel and unprecedented as it was, no voice of dissent has ever been raised. It is one of the few things in the medical jurisprudence of insanity which may be considered as established.

Sir John Nicholl, be it observed, was careful to restrict the operation of the principle to the case before him. The mental disorder was sufficient to vitiate, not any will, but the will in question. Had the testator bequeathed his property to his daughter, he would, probably, have established the will, insane as he was. The insanity would have been no bar to a natural and proper distribution of his estate, and so, I apprehend, the matter is now generally regarded. The objection arises only when the distribution is not deemed to be natural and proper by various relations who find it for their interests to destroy the will. The principle being settled that insanity does not necessarily impair a man's capacity to make a will, any more than it destroys his power to do many other things as well as ever, its effect ought not to be determined by any arbitrary rule, but rather by that judicious consideration of the various circumstances of the case which is founded on correct views of the nature of insanity and the ordinary motives of human conduct. In accordance with these views a case was adjudicated in the court of Queen's bench, in 1870, *Banks* v. *Goodfellow*, L. R. 5, 2, 5,549, Chief Justice Cockburn delivering the opinion of the court. Here a will was established, notwithstanding the testator was proved to have entertained some gross delusions, for it was obvious that these delusions could not possibly have influenced the dispositions of the will. These two cases, I presume, have settled the rule of law in regard to the effect of delusions on testamentary competence, and thus, happily, brought the law of the land into harmony with the laws, physiological and pathological, of the mental constitution.

And here we see the injustice that might be committed by making insanity, abstractly speaking, incompatible with testamentary capacity, for if we say that a man who disinherits his heir at law under the delusion that they have attempted to poison him is thereby *non compos*, how shall we answer the question whether his will should be approved even if he had bequeathed his property to those heirs at law, notwithstanding his delusions?

And let me say in this connection, that the effect of mental impairments on the testamentary power is not to be estimated solely by their demonstrative symptoms, for it may be greatest when scarcely seen by the world at large. I have never met with worse wills than some made under such circumstances. I have known a will made shortly after an apparently slight attack of paralysis, pre-eminently absurd, irrelevant to any worthy purpose, and almost if not quite impracticable of execution. And yet this man seemed to have completely recovered, and continued his ordinary pursuits till prostrated by a second attack.

Wise and proper as the doctrine may be, generally stated, that a delusion should vitiate any testamentary disposition made under its influence, cases can easily be imagined where it would be exceedingly embarrassing to determine the exact range of its application. We readily admit that the will of a man disinheriting all his heirs at law—brothers, sisters, nephews and nieces— in the belief that they have been attempting to take his life, should not stand. But supposing this delusion referred only to a single relative, the rest of them being properly remembered, I think we should hesitate to break the will for that reason alone.

In pursuing the progress of thought on this subject, we meet at last one of those extravagances of opinion, which, coming from men of commanding intellect, produce surprise if not admiration. Lord Brougham declared, on one occasion, that partial insanity, however limited apparently, should vitiate all the patient's civil acts, as well as the more general forms of the disease. He regards the mind as a single indivisible potency, and consequently that any impairment of it must be absolute, not partial. On this theory, of course, there is no place for the practice of dividing and subdividing the mind, some portions becoming unsound while others remain sound. Lord Brougham's doctrine is not without warrant, certainly, in the prevalent metaphysical theories of the last century, and, accepting them, it would be easier to reject it with feelings of wonder and surprise than to refute it. If inconsistency would furnish a conclusive argument against it, it may be found in the statement he once made, that a man might be so unsound as to be regarded by his Maker as irresponsible for criminal acts, while he might be justly held responsible by his fellow-men.

The effect on testamentary capacity of extraordinary beliefs, fanciful projects, or bequests for impracticable purposes, is frequently not very easily determined. Such things are suggestive of insanity, and the event has sometimes been made to turn on nice distinctions between insanity and eccentricity. In these cases the proper line of inquiry must depend on the circumstances of each particular case, and the decision should be governed more by the dictates of common sense than any arbitrary rules of law. In some cases there can be little difficulty in arriving at a satisfactory conclusion. If a man noted for some oddities of thinking and acting, but otherwise correct and shrewd, believes that Brandreth's pills are a certain cure for all diseases whatever, and that everybody who would take enough of them would live to a good old age, this notion would hardly vitiate a will making unexpected and unjust bequests having no connection with and traceable in no way to it. If, on the contrary, he had devoted a considerable portion of his estate to the maintenance of a fund for supplying the poor with Brandreth's pills, this, certainly, would be good reason for breaking the will. Take another case. In Massachusetts, lately, an elderly gentleman in failing health, and with diverse nervous ailments, was induced to try the movement cure, and came at last to conceive the most exaggerated notions of its medical efficacy, though it never helped him much. Indeed, some of these notions almost, if not quite, amounted to delusion. In this state of mind he made his will, by which he appropriated a great part of his estate to the establishment of an asylum for nervous invalids, to be treated by the movement method. I have no hesitation in saying that that will was the offspring of a morbid nervous condition, if not of delusion, and therefore not to be established. Whether certain mental manifestations are indicative of insanity or only eccentricity, is a point not always easily settled, and no splitting of hairs on the question will prove so satisfactory as the exercise of a little common sense. In many of these cases, where, apparently, the mental twist, is very limited, and of doubtful character, a close scrutiny of the conduct and conversation will show here and there traces of a more extensive influence, thus shedding additional light on the matter in hand.

In presenting the subject of testamentary capacity in the way I have, it was for the purpose of giving to the pathological element the prominence it rightfully deserves, and which consequently ought to secure it a controlling influence in disputed cases. And let me say, in conclusion, that the administration of justice in this particular must often be imperfect, until the light of medical science is freely admitted and used—not the light that has traveled down to us from the times of Coke and Hale, but that which we owe to the progress of knowledge during the present century, greater, far greater, indeed, than that of all other centuries together.

THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Before the county medical societyDr. E. C. Spitzka recently read a paper entitled, "The Localization of Cerebral Diseases, in the Light of recent Anatomical Discoveries." We are fortunate in being able to present you a *resumé* of the same, as follows:

There is no province in the body the interpretation of whose pathological conditions is open to so many sources of error as the encephalon, and these sources of error increase as we pass from the medulla through the peduncular tracts to the hemispheres.

While the relations between lesions and symptom are comparatively clear in the case of the pons and crus, they are, in the case of the higher, still involved in the uncertainties of experimental physiology.

There are still further sources of error, due partly to the complicated character of the various commissural connections existing between distant centres, partly to the fact that many of the sensory and motor peripheries enjoy a multiple representation in the brain, and also, that the complex character of our highest functions presupposes an equally complex anatomical basis.

Certainly the most exact method for determining the function of any ganglionic centre, as well as of its efferent and afferent fasciculi, is the anatomical, that is, the tracing of nervous strands to their central as well as their peripheral terminations. As soon as the function of all these elements shall have been determined (and they are in a fair way of being determined at the present day), it will be possible to place most cerebral symptoms in connection with lesions of definite topographical areas.

I have on a previous occasion given physiological reasons for rejecting some of the conclusions drawn from the experiments of Hitzig and Ferrier. To-night I shall endeavor to disprove them on anatomico-pathological grounds. For this purpose I have collated the cases scattered through the literature of the last five years, and compared or contrasted the general result, with several observations of my own, and the inferences of anatomical investigators.

I exclude from consideration all imperfectly recorded instances, as well as such in which either multiple lesions, or lesions of great extent existed, and in which the reporter arbitrarily selects one out of many lesions as the cause of some single symptom. Almost all the cases reported by Ferrier, and some of those furnished by Hughlings Jackson, are of this character.

Let us first take up aphasia, that complex of symptoms which pathologists have long sought to bring into relation with a certain cortical area.

Of 23 reliable cases, scattered through the literature from 1872 to 1875, the lesion was *bilateral* in *five;* in *six* there was an extensive lesion of the *left* fronto-sylvian region, including Broca's convolution; in *seven* there were various destructive lesions in the left hemisphere, leaving Broca's, and in some instances all the marginal gyri *intact;* finally, in *one* case there was a large flat abscess, limited to the *right frontal lobe.* The remaining four cases illustrate the faultiness of many interpretations *pro* and *contra* Broca's theory.

Bourneville, a pupil of Charcot, for instance, finds multiple softenings of the frontal and occipital lobes, but attributes the aphasia to a small and superficial necrosis of Broca's gyrus. The case of Boinet is similar. The other two are used polemically against Broca, but with as little reason as the former were interpreted in favor of his view.

Even from this contradictory testimony, a few definite conclusions can be drawn: 1st, that aphasia, whether due to a right or left-sided lesion, is not necessarily associated with the island of Reil, or its contiguous territory, for the case of Troisier proves that softening of the occipital lobe *alone* may cause this symptom ; 2d, that a lesion of the Meynertian territory on one side alone is not always sufficient to produce aphasia; there are four very reliable cases on record where grave lesions of Broca's convolution, or this together with the island, failed to produce the slightest effect on speech. One of the most remarkable of these four cases, is that reported by Bergmann. A dragoon had received a kick from a horse on the frontal bone; on the autopsy, the whole left frontal lobe, island of Reil and marginal convolutions were found gangrenous; the patient, however, had lived seven days after the accident, and had *never at any time during that period* manifested the slightest aphasic symptom. We also find that one-sided lesions, which a subsequent post-mortem has shown to have been destructive in character, remain permanent, and yet the aphasia which was due to that lesion gradually disappeared during life. This proves that however much the left hemisphere may predominate over the right, that there is a complete physiological symmetry between the two, and consequently that the symmetrical area of the intact hemisphere may vicariate for the affected region; on no other grounds could the re-establishment of function, after its temporary abolition through a destructive lesion be explained; 3d, both clinical experience and inference from structure permit us to say, that bilateral destruction of Meynert's territory (that is, the *insula Reili* and the *marginal gyri*,) will produce permanent aphasia.

But how are we to account for the case of Troisier, and similar ones, in which aphasia resulted from an occipital lesion? While the fibres which ultimately abut in the hypoglossal and facial nerve nuclei can be traced into the operculum and island, giving us an anatomical basis for the aphasic symptom, no *motor* fasciculus of any size can be traced to the occipital lobe!

Our faculty of speech is certainly more complex than is generally supposed, and the terms amnesic and ataxic aphasia, by no means exhaust the possible pathological interferences with its delicate mechanism. The first step in the acquirement of speech is its phonetic element, we hear a word or sound, and as far as it is a mere sound-impression it is registered in a sensory area of the cortex.

We then experiment, as it were, with our motor apparatus, until we find the combination requisite to repeat said word or sound. This motor innervation has its conscious seat in Meynert's region, while the sensory perception is located in a distant area (probably, though not certainly, the occipital lobe). Now, in order that the sensory perception may control the "correctness" of the motor expression, the two must be associated. It will then be indifferent, whether the sensory center, the motor center, or the associating band be destroyed, we will have aphasia in either case. And there are still more intricate relations which may be equally interfered with, causing either *aphasia*, *agraphia*, *alexia*, or a combination of any two of these, or all. (This was illustrated by the aid of a diagram.)

The contributions which I am able to offer to the pathoanatomy of aphasia, consist of four cases. Two of these I exclude on account of their impure character. Of the other two, the first was a negro, who was under observation for three weeks, and who, to within forty-eight hours of his death, manifested no other trouble with his speech than a great slowness; at the period mentioned it was found that he had forgotten the names of the tools used in his trade (carpenter), and did not recognize his own name, but could signify his meaning very well by symbols. He was not hemiplegic, the facial folds were obliterated on both sides, and his pupils were unequal; he was also incoherent and had loss of memory, but all these were symptoms dependent on the chronic affection from which the patient suffered (paralytic insanity).

He gradually sank and died, without any material change of symptoms.

On the autopsy, there was found general bloody suffusion of the pia mater, most marked over the convexity of the left hemisphere. There was a sub-meningeal extravasation of blood which had forced its way between the gyri, lifting the pia from the cortex, and extending in between the operculum and temporal lobe, covering the whole island of Reil. The blood was firmly coagulated, and the maroon-colored clot covered altogether a circular area, involving the first frontal part of the second frontal,[1] lower third of the præcentral, whole of the *gyrus angularis*, and all of the first temporal excepting its anterior end. There was a second hemorrhage in the caput of the corpus striatum, extending into the internal articulus of the lenticular nucleus, as well as part of the anterior portion of the internal capsule. This clot was firm and laminated, some of the laminæ being discolored, on its outside the blood had the appearance of a more recent clot, and this portion was continuous with the sub-meningeal extravasation, through a break in the cortical substance of the most anterior *gyrus opertus* of the island. Broca's convolution, as well as the contiguous portions of the island was compressed, and their medullary fasciculi were destroyed by the extravasation. This case, in which the aphasic symptoms were really minimal, shows that no matter how *extensive* a unilateral lesion may be, if its *production is gradual* (in this case a slow hemorrhage), it will give the opposite hemisphere time to accommodate itself to its vicarious duties, and the increased requirements thus thrown upon it.

The other case is in some measure an antithesis to the one just detailed. It was a man suffering from chronic mania, and who had been under surveillance for several years in our city asylum. My friend, Dr. Kiernan, described the patient as presenting no other symptoms during this period, particularly no convulsions or paralysis. But about three months before death he began to manifest symptoms of pachymeningitis; he had sharp localized cephalalgia, became occasionally stupid, and there were regular morning rises and evening remissions of the temperature. He then exhibited twitching of the facial muscles of both sides, and seven weeks after the initial symptoms had manifested themselves, he had general bilateral convulsions of an epileptiform character, without complete loss of consciousness. Of these attacks he had seven altogether, in the last he died. From the time of the occurrence of the first convulsive seizure, he became gradually and progressively aphasic, his aphasia being of the purely ataxic variety. At first he used wrong words, or spoke in broken sentences, finally he could not speak at all, and this remained unchanged for the remainder of his life. On the autopsy, the dura mater, which elsewhere was perfectly healthy, was found thickened, infiltrated with pus, and adherent to the skull on the one hand and fused with the leptomeninges on the other, over the right frontal lobe. Dense pseudo-membranes were intercalated between the pia and cortex, and the sulci were filled with the same material.

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* In this as in previous papers, the more rational nomenclature of Meynert-Wernicke is adopted in preference to that of Ecker.

The whole right frontal lobe as far back as the præcentral gyrus, and down to the level of the lowest frontal gyrus, was softened and necrotic.

Thus much for the pathological side of the case; we had nearly the same cerebral area involved on the right side as was involved on the left side in the negro; the lesion was also one of slow production, and yet we had complete aphasia, showing that the left hemisphere had not vicariated for the right. The reason for this was found on examing the teratological condition present, the brain was completely asymmetrical. The left cerebral hemisphere was atrophic, and the right crowded it away from the median line.

(Other asymmetrical conditions as of the optic tracts, pyramids and cerebellum were also referred to.) It was obvious then that the left hemisphere was prevented from vicariating for the right, on account of its congenital deficiency. This patient was not ascertained to be left-handed during life. The negro was dextral.

Let us now proceed to study the results of cerebral anatomy, as well as the comparative value of various methods[1] employed, and then apply the results obtained to the elucidation of pathological problems.

In the first place, it must be declared an error, to suppose that any motor or sensory periphery has only one representative centre, in the central nervous system. If we trace any fasciculus of the pes pedunculi, which appears to terminate in one of the motor nerve nuclei, up into the corona radiata and internal capsule, we find that its fibres become scattered, and interlace with other fasciculi of a very distant peripheral termination perhaps. Where it is possible to trace such a fasciculus to the cortex, it is never found passing into one convolution alone, but into several. We must believe that every point of the bodily periphery is represented in the cortex of the small cerebrum of the dog; if this is granted, how much more frequently must a given periphery be represented in the immensely more extensive human cortex? (The writer then gave reasons for considering the occipital lobe as mainly, *though not exclusively*, sensory, while the frontal was mainly though not exclusively motor, and that there were great anatomical probabilities for localizing the voluntary innervation of the face, tongue and larynx, perhaps in the operculum and island).

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[1] A fuller exposition of the methods employed by European investigators, as well as by the author, will be found in the present number of this JOURNAL.

As in the operations of a telegraph, it is indifferent whether the telegraph station or the wires be destroyed, so far as the transmission of messages is concerned, so in the brain it will be difficult to judge from the results of a lesion to its seat in many cases. Hemianæsthesia, for instance, may be due to a comparatively small hemorrhage at the base of the corona radiata, (whose posterior portion, anatomical methods have traced to the posterior spinal column) or to a larger one in the medullary centre, or finally to an extensive cortical lesion.

Hemiopia may be due to a small lesion of one optic tract, of the posterior tubercle of the thalamus, or of the occipital lobe, [writer here referred to the interesting case of Dr. Pooley's which was reported in the JOURNAL, and in which the writer considered the cortical gumma (the primary lesion) as the cause of this symptom.] Two general and very important inferences can be drawn from the combination of pathological experience and anatomical inference. First, since the fasciculi which terminate in the central tubular gray matter on the one hand, and the basal ganglia or cortex on the other, are more scattered at the latter terminus than at the former, it follows that a comparatively limited lesion in the medulla or pons will produce as marked a paralysis of a certain muscular group, as will a much larger lesion of the hemispheres. Secondly, as the fasciculi, which represent the voluntary control or conscious transmission of motion and sensation in special areas of the bodily periphery, are separated from other fasciculi in the medulla, pons and crura, (partly) while they are intertwined with them in the hemispheres, it follows that the more limited a paralysis or anæsthesia is to any special territory, the more probably will the lesion be found in the peduncular tracts, while the more complicated the symptoms are, the nearer the cortex will we have to seek for the corresponding lesion. We accordingly find that very small tumors, cysts or apoplexies, are by no means infrequently present in the hemispheres, without having caused any appreciable symptom, while in the medulla relatively small lesions produce grave or even fatal results. An example of this was offered by a patient who suffered from that variety of progressive paresis, in which the spinal symptoms predominate and are the first to appear, who became gradually but completely deprived of the use of his tongue, so that while its reflex motions, such as the automatic actions performed by it, during mastication, were perfect, and no atrophy could be observed, he was unable to protrude it when asked to do so, and he exhibited that symptom which is now called *alalia*, for he could not speak at all, only labial sounds being possible. At the autopsy no hemispheric lesion could be found to account for this; there was considerable degeneration of the posterior, and lesser of the lateral columns of the cord, and a marked but small sclerotic patch was found in the raphe of the medulla at the horizon of the hypoglossal nucleus. Through the spot affected by sclerosis in this patient, normally run those fibres which connect the pyramids with the hypoglossal nucleus. As these were destroyed here, no voluntary messages could be transmitted, but no trophic disturbance occurred, for the nucleus itself was intact.

One curious observation of recent times insisted on, in its physiological bearings most strongly by Brown-Séquard, is that a hemiplegia or a unilateral convulsion does not necessarily point to a lesion on the opposite side of the brain (where such lesion is hemispheric); that there are exceptional cases of this kind, there can be no doubt, they can no longer be explained away by supposing unrecognizable lesions to have existed in the other hemisphere, and I have myself made the autopsy of a case of this kind, which had been under the clinical charge of my friend, Dr. T. R. Pooley.

For this there is an anatomical explanation. The pyramidal decussation, which is nearly a complete decussation in ninety-nine individuals out of a hundred, in others is almost entirely absent, approximating the condition found in other mammalia; where it is absent, voluntary motor impressions must remain on the side where they originated in the cortex. (The writer then described the inferential seat of hallucinations, objected to the theories of Moos[1] and Jolly, discussed the relations of the corpora quadrigemina, and gave a digest of the views of Meynert on the anatomy and pathology of the thalamus. He then discussed the relations of the raphe and oculo-motor innervations.)

One of the most difficult chapters in the localization of lesions, is the influence of pathologically affected localities upon remoter intact regions, with which they are in commissural relations. Thus abscesses in the cerebellum often cause convulsions; it is difficult to believe that the original motor impulse resides here, I should rather seek for a transmission of the irritation to the cerebral cortex or ganglia ; it is well known that a powerful fasciculus connects the cerebellum and cerebrum through the brachium conjunctivum (Meynert, Luys), not to speak of the connections established by the pons varolii.

In many cases of tumour of the pons where the tegmentum was deeply involved, conjugated deviation of the eyes has been noticed, a symptom which *a priori* would seem to point to the corpora quadrigemina as its seat. What explanation has anatomy to offer for this? Well, there is a band of fibres known as the *posterior longitudinal fasciculus of the tegmentum*, which runs close to the floor of the aqueduct and fourth ventricle, whose lower terminus is unknown, but whose upper is in and close to the corpora quadrigemina (Flechsig, Deiters, Forel). We find that it rises and sinks in the animal scale with the development of the visual apparatus, it is almost absent in the mole, and I can add that it is rudimentary in the bat. Irritation of any portion of this tract might be transmitted to the corpora quadrigemina, and if unilateral could thus produce conjugated deviation. The same reasons might be advanced for the occasionally similar results of cerebellar lesions. It is thus often impossible to localize a lesion on the strength of a single symptom, and where, as in a case of multiple syphilomas which I recently described, three lesions are present in the same tract of fibres, it is impossible to refer the disturbance of that co-ordination over which such tract presides, to any one of them.

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[1] *Archives of Ophthalmology and Otology*, 1876.

There is another important conclusion to be drawn from the anatomically demonstrated multiplicity of tracts having the same function, viz., that destruction of one special tract does not necessarily imply loss of function—thus destruction of one anterior pyramid is not always followed by complete paresis of the opposite side of the body, as there are deeper fibres (Henle) having the same and similar central connections.

The pathology of the remainder of the medulla oblongata is so well known and has been brought into such close connection with the anatomy of this region that I need not here refer to it.

(The writer then discussed the anatomical connections of the cerebellum, its relations to the acoustic nerve which was most probably the basis of the sense of equilibrium, determined by the semicircular canals. He then showed that although clinical evidence was wanting, it might be expected that some difference would be found between superficial (cortical) and deep lesions of the cerebellum, for it was determined by anatomists that the *nucleus dentatus cerebelli* was connected with one great fasciculus which entered the cerebellum, the cortex being connected with the other two. A case of a patient who could only carry on his work (tailor) when leaning against some firm object with his head, or abdomen, and after whose death a cholesteatoma of the *vermis anterior cerebelli* was revealed, was then given.)

Returning to the hemispheres of the cerebrum once more, let us see how far we are permitted to localize symptoms in definite areas, always promising that the lesion is not an irritative one, but one which destroys slowly the centres or their projection fibres. Hemiplegia, hemianæsthesic hemiopia, or a special form of aphasia, can be approximately referred to the disturbance of a special cerebral district; more limited symptoms can not be yet so referred. (Even clinical experience was conflicting on this point; cases from Samt, Fürstner, Bernhardt, Hughlings Jackson, himself, and others, were cited as testimony against Ferrier's conclusions.)

As to still more complex symptoms, disorder of the higher faculties for which no anatomical substratum has been found, to attempt to localize them in special areas would be nothing less than absurd. That such faculties depend on the association of numerous different and distant centres, is the only rational supposition that can be held, and any intricate intellectual processes *must* involve the greater part, or the whole, of one hemisphere.

I say this more especially because some recent writers have endeavored to associate such complex symptoms as moral insanity with deficiency of the occipital lobes, or the presence of certain aberrant convolutions, such as Benedikt, of Vienna, in answer to whose propositions Meynert and Heschl very properly insisted that while aberrant convolutions occurred in honest workingmen and in sages, the occipital lobe was relatively better developed in the anthropoid apes than in man, and that consequently if the moral sense depended on that lobe these apes were certainly superior to man!

(In conclusion the writer showed *why* a pathological basis could not be expected to exist for every symptom, he referred more especially to certain of the higher intellectual alienations.[1] Their very existence presumed an *intact* though a *perverted* anatomical basis; negative observations were of a positive value here.)

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[1] It would hardly be considered possible that within the last half-decade an American alienist should undertake to assert from the negative evidence of the autopsy made in the case of Waltz, that this murderer could not have been insane.

Although that alienist should be mildly judged in so far as he sought to demonstrate the correctness of a theory which he expressed during the criminal's life time, yet in view of the negative evidence of cerebral autopsies in many of the insane, such a conclusion must, always appear ill-founded, and over-confident. Notwithstanding which, it has become incorporated in a recent compilation published in the May number of the N. Y. Neurological Journal, 1876.

After the reading of the papers of Dr. Spitzka, Dr. Geo. M. Beard remarked that it was rather warm weather to discuss such difficult themes.

His own theory of the physiology of the brain was a sort of compromise between the localizers and anti-localizers. It was that the different faculties, physical and psychical, are localized in definite centres or starting points, but that such center is capable of acting and being acted on by numerous and complex reflex irritations. This theory would account, he thought, for all the known phenomena of the brain and mind, in health and disease. It was stated, provisionally, as a working hypothesis; but if true, it must account for all facts relating to the brain that shall hereafter be discovered.

There have been three theories of the physiology of the brain; first, the old theological theory, that the mind is something quite outside of the body, and, so to speak, comes down upon it, making the brain its seat. This theory belongs to the pre-exploratory stage of the subject, and it is not for science to accept or reject it. It simply passes it by.

Among scientific men some have held with Flourens, that the brain acts as a whole, and others with Gall, that the separate faculties are separately and absolutely localized. Recently Brown-Séquard has been advocating the theory that there are no centres of function, but that the organs of the different faculties are scattered through the brain. By this theory he explains very satisfactorily the cases where paralysis occurs on the same side with the lesion, and other anomalies. But his theory will not account for other facts of the brain, and in science a theory must account for all the phenomena, else it is valueless only as scaffolding by which we rise to a true theory that will account for them.

The reflex theory of the brain, or the body theory as it might be called, has the strong support of analogy, since the body itself is but a bundle of reflex actions. When any irritation is applied to any part of the body, the effects of that irritation may be felt in that part or at some very distant part, or in many other and distant parts, according to the character of the irritation.

Take the irritations that give rise to tetanus, a subject that

Dr. Beard had been specially investigating during the past year. Fever ulcers, cancers, grave diseases of the skin, are not as likely to create tetanus as some slight affair—a tack, a splinter, or a nail in the finger or foot.

So all through the body and in various diseases. Take the cases recorded by Dr. Otis, where stricture of the urethra had caused neuralgic and various other morbid sensations. Take the cases of paralysis reflected from phymosis, observed by Dr. Sayre and others. Take the cases of headache that come from eye trouble. Take the case of Dr. Fisher, which Dr. Beard published two years ago, wherein chronic gleet resisted all treatment until a mechanical contrivance in the shoes relieved the ligaments in the bottoms of the feet that had been strained by excessive marching. A distinguished scientific man, now deceased, told him a few years ago, that while camping out in Florida he was bitten by a poisonous spider. The sore healed, but subsequently whenever he had a passage from the bowels a painful sensation was felt in the scar.

The symptoms of ataxy have been caused by a scar on the ball of the great toe, and cured by a removal of the scar: hiccough had been cured by pressure on the wrist; hysteria in women by compression of the ovaries, and hysteria in men by compression of the testicles; severe superficial burns may cause ulcers in the bowels; a nervous child may be quieted for hours by scratching the head, or the palm of the hand, or the soles of the feet. In one case of hay fever the symptoms were excited by single pressure over the left eye-brow, and in another case by the touch of the hair on the face when blown by the wind. Trifling lesions of the neck of the womb make up and keep up hysteria and loss of voice, while grave uterine diseases, as cancer, etc., rarely or never produce such reflex effects. Sick headache may be reflected from the stomach, the liver, the genital organs, or the spinal cord. Nervous dyspepsia, when severe, may cause pain in the calf of the leg, while neuralgia of the arm may accompany disease of the heart.

Who could, from our present knowledge of physiology and pathology, predict their reflex effects? Who can fully explain why they happen just as they do, instead of some other way?

I believe that the brain in this respect follows the analogy of the rest of the body, and does not have, as many suppose, laws peculiar to itself. Accepting this theory, we can see that certain kinds of injuries or disease of the brain might act directly on the function of the part injured, while a different kind of injury might act wholly on one or many distant parts. An injury or lesion that partakes of the character of a slight local concussion, may cause molecular disturbance, is propagated along the line of least resistance to some one or several centres.

On this subject we are not left to analogy alone. The results of direct experiments on the brain are in harmony with this view. Mild galvanic irritation of definite areas of the cortex cerebri produces constant effects of various kinds. Strong galvanic irritation of the same areas produces various and complex effects on the same side or on both sides. The theory of diffusion to the central ganglia, by which it has been sought to explain the effects of *mild* galvanic irritation, is untenable, as I convinced myself when I repeated the experiments of Hitzig. All electro physics is against it. Without experimenting at all, we could tell from our knowledge of the physical laws of electricity that it is diffused in various directions, at a distance from the electrodes, and the galvanoscopic frog, that is sensitive to exceedingly small currents proves this, but then diffused currents are insufficient to excite the nerve.

The reflex or body theory thus explains the real fact observed by Gall, explains the experiments of Hitzig, and explains the anomalous pathological facts gathered by Brown-Sèquard and others.

It may be objected to this theory that it makes it impossible to diagnose accurately in all cases the seat of disease in cerebral trouble. This is true enough, but it is a separate issue. That is the way the body is made all through and in every way if not in all of its functions. Physicians see every day cases of sick headache, of neuralgia, of paralysis, of hysteria, of spinal and cerebral irritation, of eye and throat trouble, that are reflected from some part of the body, and in many cases it is impossible to tell certainly from just what part. All living things are constructed on this principle. What reason have we to expect the brain to be an exception to the law of the body? It would be a very pleasant thing if the body and brain were so made that one could tell always just where any disease originates—from what part it is reflected; but we are not so made. It would also be a very pleasant thing if there were no disease at all. We must take the body, in health and disease, as we find it, not as we would have made it if we had had the power. In the majority of cases of body disease, we can tell where the seat of the trouble is, but, on account of the complications of reflex action, not in all cases; and in the majority of cases of brain disease we can tell with reasonable accuracy where the seat of the lesion is, but, on account of the complications of reflex action, not in all cases. I continually see and study in detail cases of paralysis from brain disease, in which I am not sure of the diagnosis; and the doubts and difficulties increase rather than diminish with increased experience. There are many other facts and considerations bearing on this theory that might be discussed in a proper time and place.

The Neurological Society.

At the June meeting of this society, Dr. James G. Kiernan read a paper entitled "The Patho-Psychology of Alcoholism in its relation to Paresis and Epilepsy." We present the following synopsis:

The real physiological and pathological action of alcohol in the system, is as yet undetermined. There have been, it is true, many dogmatic assertions on the subject, but these are rather things wished for than strictly demonstrable facts.

This condition of things has resulted from the mingling of sacerdotal and ethical influences, which, as usual, vitiate any attempt to place matters on a sound, scientific basis. Taking the view most prevalent in the United States, alcohol is a substance foreign to the body, acting only as a spur to vital processes, causing thereby more subsequent exhaustion, than the original benefit, or as very meagre heat-producing substance.

It is a very frequent cause of paralysis, insanity and all forms of disease and of all crimes. These statements are so frequently and so strongly made, that it is not surprising that they are accepted as truths.

The exact function of alcohol in the system is not settled. It certainly, as has been shown by Anstie, acts as a true food, and the heat-producing theory rests only on that very fallacious chemical therapeusis which ignored the great difference between simple inorganic, and the very complicated organic compounds. It is even yet doubtful whether alcohol is not a normal constituent of the blood.

Certain experiments are known which would, according to the same process of reasoning by which Headland shows the presence of quinine in the normal blood, show the presence of alcohol as a constituent of the blood in the normal condition. That life can be sustained on alcohol alone for some considerable time, is a fact known to every physician, but which is totally ignored by the temperance physiologists, or, at best, has a very dubious explanation given to it.

That alcohol does cause certain diseases is, of course, beyond a doubt; but that it exerts an influence of the nature frequently ascribed to it sufficient to exclude the action of any other cause, is certainly not well established, there being so few cases, so purely due to alcohol, as to admit of no doubt that alcohol, and alcohol alone, was the cause.

Thus locomotor ataxia is not unfrequently ascribed to the action of alcohol, yet nine-tenths of cases so ascribed would be found, if carefully examined, to have had sexual excess, syphilis, exposure to cold and damp, and the numerous other causes to which, when there is no possibility of bringing in alcohol, the disease is ascribed.

Hammond says, "in the majority of cases no cause can be assigned" "which is very probably the case with the greater part of the remainder, only as the individual happens to be intemperate or indulgent to excess in sexual pleasures, and his friends happen to have a holy horror of these two vices, they endeavor (and do not hesitate at a little ingenious twisting) to prove that the alcohol, or the sexual excess, was the cause of what otherwise would be registered" "etiology unknown."

There have been certain cases where alcohol has undoubtedly caused locomotor ataxia, but these are far from typical, and have a very favorable prognosis.

As with locomotor ataxia, so with other nervous diseases, these are all increasing with great rapidity although compared with the period of the reigns of the four Georges, this is a very temperate age.

The Irish in their native land have always been held as a very intemperate, yet certain forms of disease are infrequent among them there as compared with themselves in England and the United States.

Causation, to speak frankly, is hastily jumped at,more especially where certain benevolent desires point the way, as is the case with alcohol. Alcohol certainly does cause disease, both psychic and physical, and with the forms of the former it is more especially the object of this paper to deal. The psychopathological action of alcohol on which all authorities are agreed, is the production of a peculiar delirium which, whether it result from alcohol alone, or from an abstention after a long continued debauch, is acknowledged by all as a consequence of alcoholic poisoning. This, like the delirium produced by other toxic agents, as opium, belladonna, and sometimes quinine, as also that of certain fevers, is characterized by great dread, hallucinations of disagreeable objects, etc. There are also said to be at times pleasant and agreeable visions. These are exceptional, and in the few cases that occurred of those which came under observation, they were certainly attributable to modifying circumstances and were really a psychic disturbance complicating the existing delirium. One case a broker had been engaged in selling and buying gold to a considerable amount, failed, and while laboring under the excitement produced by his arduous business labors went on a prolonged spree which resulted in delirium tremens, in which the idea of enormous quantities of gold being on the ground before him were mingled with the ordinary hallucinations of delirium tremens. The delirium varies.

In certain cases, as in the delirium of fevers, the patient, while retaining a recollection of the hallucination, can be recalled to ordinary life by a question from a by-stander regarding his hallucination, the unreality of which, under the temporary stimulus produced by the contact with a normal mind, will then be recognized, although the patient five minutes before believed firmly in the truth of his delusion.

Thus in one case cited by Prof. Hammond, the patient displayed much emotional disturbance under the influence of the hallucinations; when asked if he really believed the hallucination, indignantly demanded if they thought he was a lunatic. Sometimes, however, the hallucinations have a stronger hold, and have doubtless an origin in disturbed cerebral circulation. Thus one patient who came under observation insisted that some one was lowering pavement blocks on the top of his head. The hallucinations generally affect sight and hearing, but in this case there were only disorders of touch limited to the vertex. Sometimes there is, strictly speaking, no delirium, but only a general dread and much emotional disturbance. These are all functional and changes in the circulation rather than changes in the nerve cells themselves, and in their nature they resemble the cases where the disturbance is due to a poisoned blood.

The forms of insanity, where every other etiological factor can be safely excluded and which can only be assigned to the influence of alcohol, have all one general characteristic, that of depression, and are closely allied in nature to those produced by other poisonous agencies. The insanity arising during a violent secondary fever of syphilis and the insanity of alcoholism, as also the insanity produced by the fungi infesting the bread-yielding plants, have all so much in common that we can safely assert that alcohol *per se* produces only the toxic class of psychoses, and that the other forms usually ascribed to alcohol are due to it but in a very subordinate degree, other causes complicating alcohol to such an extent that its action may be regarded as of small extent, perhaps rather salutary than otherwise, inasmuch as the other causes, did no alcoholism exist, would be considered sufficient to cause the insanity.

The psychological action of alcohol, which is said to very much change during intoxication the character of the individual, is a point on which there is very little dispute, yet a careful examination will, I am sure, convince one that the tendency of alcohol is to only bring out the natural character of the intoxicated individual of which more or less slight evidences are to be found during the sober condition; but which the stimulant action of alcohol brings out into very strong prominence.

The great reason for the general belief on this subject seems to me to be the lack of observation of the intoxicated individual's previous character and the great tendency of all weak-willed individuals such as these are to throw the blame on something which will render them less responsible. There has been an attempt to establish a form of disease known as inebriety. The exact basis for this disease can scarcely be determined from the writings of those who advocate its establishment; there is so much sentiment about it, as there is about everything connected with this subject; but to quote from the lately established *Journal of Inebriety*, "a weak will-power, coupled with a sensitive nervous system, seems to be inherited in most cases of inebriety." This by the inebriate advocates is construed into an irresistible tendency to drunkeness, regardless of everything, and it is asserted that this tendency is a physical disease, and therefore to be treated as such. We know of many cases of morbid impulse other than this with a less satisfactory explanatory motive, but for that reason we do not consider them as fit subjects for treatment in an asylum.

There are many weak-willed criminals who are nevertheless punished for their crimes, although their parents have been criminals and their training bad. We may put them in a reformatory and it is quite a curious fact, that the most successful inebriate asylums have been those conducted on a reformatory plan, as the Washingtonian at Boston and the Fort Hamilton Home.

Prof. Hammond, at the close of last meeting of he society, well defined this class of beings as "Drunkards," and the true difference between the inebriate and the drunkard is only a matter of cash.

The language of a report quoted in the *Journal of Inebriety* is "The institution is no place for loafers, the money qualification is enforced in most cases." Here is the great distinction. The inebriate having money is sent to the asylum to be cured of his disease, while the equally weak-willed drunkard being moneyless is sent to the work-house to be punished for crime.

Any impartial observer will say that the establishment of these asylums by the State is only a fraud on the public, and the attempt to twist a sensible protest of the American Association of Medical Superintendents of the Insane Asylums against the incarceration of sane criminals with victims of mental disease, into an approval of inebriate asylums, is worthy of the cause of the inebriate curers.

The pathology, diagnosis, and treatment of inebriety appears, to a candid observer, like "a tale told by an idiot, full of sound and fury signifying nothing."

Chronic alcoholism has many of the characteristics of other nervous diseases, and so many other influences mingle in the case that, as in the acute form, it is difficult to say how much is due to alcoholism, how much to overwork, or sexual excess, or exposure, or syphilis. In all probability, did there not exist in the cerebral cortex some defect due to another cause, there would not be many cases of chronic alcoholism. That the brain of the chronic alcoholist shows very marked changes is undoubted, but who can say, but like an over-worked engine, it breaks down under an extra strain. The chronic alcoholist, if alcohol be taken away absolutely, will have a very hard struggle if he does not break down physically or mentally; a little alcohol will enable him to get along very comfortably. And the over-worked Paris literary hack, who has to keep up a constant drain on an exhausted brain, can only do this by the use of alcohol, and if he did not drink, would soon become an inmate of the asylum. In the excessive bustle and hurry is the probable cause of much that is claimed as due to alcohol.

The changes in acute alcoholism seem most extensive along the fissure of Sylvius and in the occipital lobe, as they also seem to be in chronic alcoholism due to successive attacks of acute alcoholism.

In dealing with the subject, I have given conclusions rather than extended reasoning from the facts given; these seem to me to follow so naturally that they form the only apology for this attempt to protest against the general desire to substitute wishes for exactly ascertained facts, and the great tendency to consider everything as due to irresistible impulse, thus furnishing a specious excuse for the meanest crimes.

DISCUSSION OF DR. KIERNAN'S PAPER.

Dr. E. C. Spitzka, while agreeing with Dr. K. in many important points, would ask for more definite information regarding the pathology of alcoholism. He had understood that

Dr. K. claimed the existence of two separate conditions of the cerebral cortex as the result of intemperance. In no author, ancient or modern, could a similar statement be found, and in his own autopsies, when he found any pathological condition it, was diffuse induration, due to proliferation of the connective tissue. Our late distinguished Dr. Peters had fifteen years ago called attention to the preternatural fineness of the brain in drunkards. He also had expected to hear the symptomatology more thoroughly discussed than had been the case, particularly with regard to the hallucinations and delusions of drunkards. He thought that the hallucinations could be divided into two great groups; 1st, true hallucinations, due to cortical hemispheric conditions; and 2d, delusive interpretations of scotomic dots, due to retinal hyperæmia. The resulting figures are characterized by being small black objects, cockroaches, beetles, bats, snakes, small devils, mice and rats; while the first group represented visions of faces, large figures, buildings, etc.

He endorsed heartily Dr. Kiernan's objections to the cant indulged in by the superintendents of certain inebriate asylums —a cant which is but an echo of the teachings of some of our eastern lunatic asylums, as well as some English institutions, regarding which one of the old English alienists said that they do not deserve the name of scientific hospitals, but of boarding-houses whose boarding housekeeper was the possessor of a medical diploma.

The following case was also presented by Dr. Spitzka, which called out considerable discussion.

A case was exhibited of a peculiar reflex spasm, limited to the muscles of forced inspiration and the platysma myoides. It was rare that the action of the latter muscle could be so well studied as in the present case. These spasms were very violent in character, and their exciting cause was over-exertion in walking or speaking. Dr. Spitzka, who exhibited this patient, was of the opinion that the primary cause was an irritation of the anterior pulmonary plexus of nerves, produced by the pressure of a post-sternal tumor, which had been diagnosticated four years previously by Dr. Alonzo Clark; he himself believed the tumor to be of a scrofulous nature, as the dullness had become less marked, and a superficial varicosity of the thoracic veins had disappeared after a thorough course of iodide of potassium. He had not had an opportunity of examining the larynx, but the peculiar character of the voice led him to believe that the recurrent laryngeal nerve was implicated. From the fact that the platysma; diaphragm, trapezius and scaleni were involved and not the sterno-cleido mastoid, he did not believe the spinal accessory to be the motor nerve involved, but rather the cervical plexus,—even the trapezius is supplied by branches from this plexus as Claude Bernard had proven experimentally.

The irritation passed from the anterior pulmonary plexus, up the vagus to the medulla, and there was transmitted in some way to the centres for respiration. He had been informed that other practitioners who had seen this case considered the spasms as choreiform, a view in which he could not participate[1].

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[1] Paralysis of the left vocal cord has been since found in this case by Dr. Clinton Wagner, to whom I am indebted for the laryngoscopic examination. The patient is now suffering from hæmoptysis, probably bronchial in character.